

VIVIENNE HELEN PAYNE

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Vivienne Payne leads the Tropospheric Composition Group in the Earth Science Section at the Jet Propulsion Laboratory. She is actively involved in research in the areas of trace gas remote sensing, atmospheric radiative transfer in the microwave and infrared regions and molecular spectroscopy in the context of atmospheric remote sensing. She has extensive experience with spectrally resolved satellite measurements, from development of data products through validation/error characterization and scientific utilization, having served on a number of US and European satellite teams (Aura, Aqua, OCO-2, Suomi-NPP, PMM and Envisat).

Education

- 2001-2006** **University of Oxford, DPhil**
 “Retrieval of Water Vapor and Methane from the MIPAS Satellite Instrument”
1996-2001 **University of Edinburgh, MPhys (Physics) First Class Honours**
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Experience

- 2014-** **Group Supervisor, Tropospheric Composition,**
 Jet Propulsion Laboratory, California Institute of Technology
2012- **Scientist**, Jet Propulsion Laboratory, California Institute of Technology
2009-2012 **Staff Scientist**, Atmospheric and Environmental Research (AER)
2006-2008 **Senior Research Associate**, AER
2005 **Research Associate**, University of Colorado, Boulder
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Mentoring activities

- Postdocs supervised:** Hilke Oetjen (2012-2014)
Graduate interns: Ninos Hermis (2016-present)
Undergraduate interns: Wayana Dolan (2015-2016)
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Service and Outside Activities

- **Associate Editor**, IEEE Trans. Geosci. Remote Sens., 2012-present
 - **Session chair**, Fall meeting of the American Geophysical Union, 2016
 - Reviewer for Journals: *J. Geophys. Res., IEEE Trans. Geosci. Remote Sens., J. Quant. Spec. Radiat. Transfer, Atmos. Meas. Tech., Atmos. Chem. Phys., J. Appl. Met. Clim., Radio Science*
 - Reviewer for Grant Agencies: NASA, DoE, NOW (Netherlands Science Council), NERC (National Environmental Research Council)
 - Reviewer for Conferences: International Geoscience and Remote Sensing Symposium (IGARSS)
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Awards and Fellowships

- 2017 JPL Team Award, for supporting mission teams in the Earth Science Senior Review process
2017 JPL Team Award, for help in the development of the JPL Earth Science strategic plan
2017 JPL Team Award, for outstanding review of Earth Venture suborbital science proposals
2016 NASA Group Achievement Award for the OCO-2 Science Algorithm Team

2016	JPL Team Award, for implementing the baseline OCO-2 data processing algorithms
2015	JPL Team Award, for essential contributions to the success of the OCO-2 mission
2015	NASA Group Achievement Award for the Global Precipitation Measurement Mission
2015	JPL Team Award for Earth Science Senior Review proposal support
2014	NASA Group Achievement Award for the Aura Tropospheric Emission Spectrometer
2012, 2014	JPL Team Award, for contributions to the launch and operations of OCO-2
2010	AER Employee of the Year.
2005	Rupert Ford Fund Fellowship (administered by the Royal Meteorological Society)
2001-2004	Natural Environmental Research Council (UK graduate studentship award)
1996-1997	Margaret Campbell Scott Entrance Bursary to study undergraduate physics.

Funded proposals

NASA proposals funded as PI

- New constraints on the impacts of fires on air quality and the nitrogen cycle from CrIS observations of PAN, Science of Terra, Aqua and Suomi-NPP. (2018-2021)
- Inter-calibration of microwave Sensors: Water vapor sounding channels and window channels over land, Precipitation Measurement Mission Science Team (2012-2015)
- Verification of spectroscopic input to the OCO-2 forward model and related error characterization, Orbiting Carbon Observatory 2 Science Team (2011-2014)
- Maintaining high quality spectroscopy for the Community Radiative Transfer Model (Enhancing the Capability of Computational Earth System Models and NASA Data for Operation and Assessment), (2011-2014)
- Constraints on high-latitude regional methane fluxes through integration of satellite, aircraft and ground-based observations with models, Atmospheric Composition: Modeling and Analysis (2010-2013)
- Inter-calibration of microwave sensors for TRMM and GPM using a well-validated radiative transfer code, Precipitation Measurement Mission Science Team (2010-2013)

NASA proposals funded as Co-I

- Isoprene Measurements from Space: New Global Constraints on Emissions and Photochemistry from Synthesis of CrIS and OMI Data, Atmospheric Composition, Modeling and Analysis Program. PI: Dylan Millet, University of Minnesota (2017-2020)
- Decadal Record of Lower Tropospheric Methane From Satellite Measurements of Total Column and Free-Tropospheric Methane Concentrations, Atmospheric Composition, Modeling and Analysis Program. PI: John Worden, JPL (2017-2020)
- Refined Atmosphere Data Products from CrIS and ATMS, Suomi-NPP Science Team. PI: Jean-Luc Moncet, AER. (2014-2017)
- Fresh constraints on the global ozone budget through the analysis of new peroxyacetyl nitrate (PAN) observations from TES, Aura Science Team, PI: Emily Fischer, Colorado State University. (2013-2016)
- Use of GOSAT, TES and suborbital observations to constrain North American methane emissions in the Carbon Monitoring System, PI: Daniel Jacob, Harvard University. (2012-2014)
- New TES retrievals of Pollutants and Trace Gases for Air Quality and Tropospheric Chemistry Studies, PI: Mark Shephard, AER (2007-2010)

Other funded proposals

- Co-I on Analysis of Climate-Relevant Gas Absorption Properties from AWARE and Other ARM Spectral Measurements, DoE Atmospheric System Research Program. PI: Eli Mlawer, AER (2017-2020)

Refereed Publications

2018

Fischer, E. V., L. Zhu, L., **V. H. Payne**, J. R. Worden, Z. Jiang, S. S. Kulawik, S. Brey, A. Hecobian, D. Gombos, K. Cady-Pereira and F. Flocke: The Contribution of Fires to TES Observations of Free Tropospheric PAN over North America in July, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2017-1025>, accepted for final publication in ACP

2017

- K. E. Cady-Pereira, **V. H. Payne**, J. L. Neu, K. W. Bowman, K. Miyazaki, E.A. Marais, S. S. Kulawik, Z. A. Tzompa-Sosa, J. D. Hegarty, Seasonal and Spatial Changes in Trace Gases over Megacities from AURA TES Observations, *Atmos. Chem. Phys.*, 17, 9379-9398, <https://doi.org/10.5194/acp-17-9379-2017>, 2017
- V. H. Payne**, J. L., Neu, and H. M., Worden, Satellite observations for understanding the drivers of variability and trends in tropospheric ozone, *J. Geophys. Res. Atmos.*, 122, doi:10.1002/2017JD026737, 2017
- V. H. Payne**, E. V. Fischer, J. R. Worden, Z. Jiang, L. Zhu, T. P. Kurosu, S. S. Kulawik: Spatial variability in tropospheric peroxyacetyl nitrate in the tropics from infrared satellite observations in 2005 and 2006, *Atmos. Chem. Phys.*, 17, 6341-6351, doi:10.5194/acp-17-6341-2017, 2017.
- F. Oyafuso, **V. H. Payne**, B. J. Drouin, V. M. Devi, D. C. Benner, K. Sung, I.E. Gordon, R. Kochanov, Y. Tan, D. Crisp, E. J. Mlawer and A. Guillaume, High-accuracy absorption coefficients for the OCO-2 mission: Validation of updated carbon dioxide cross-sections using atmospheric spectra, *J. Quant. Spectrosc. Radiat. Transfer*, doi:10.1016/j.jqsrt.2017.06.12
- M. Huang, G. R. Carmichael, R. B. Pierce, D. S. Jo, R. J. Park, J. Flemming, L. K. Emmons, K. W. Bowman, D. K. Henze, Y. Davila, K. Sudo, J. E. Jonson, M. T. Lund, G. Janssens-Maenhout, F. J. Dentener, T. J. Keating, H. Oetjen, and **V. H. Payne**: Impact of Intercontinental Pollution Transport on North American Ozone Air Pollution: An HTAP Phase II Multi-model Study, *Atmos. Chem. Phys.*, 17, 5721-5750, <https://doi.org/10.5194/acp-17-5721-2017>, 2017
- S. S. Kulawik, C. O'Dell, **V. H. Payne**, L. Kuai, H. Worden, C. Sweeney, S. C. Biraud, L. Iraci, E. Yates, T. Tanaka, Lower-tropospheric CO₂ from near-infrared ACOS-GOSAT observations, *Atmos. Chem. Phys.*, 17, 5407-5438, <https://doi.org/10.5194/acp-17-5407-2017>, 2017
- L. Zhu, E. V. Fischer, **V. H. Payne**, T. W. Walker, J. R. Worden, Z. Jiang and S. S. Kulawik, PAN in the eastern Pacific free troposphere: A satellite view of the sources, seasonality, internannual variability and timeline for trend detection, *J. Geophys. Res.*, doi:10.1002/2016JD025868, 2017
- A. Eldering, C. O'Dell, P. Wennberg, D. Crisp, M. Gunson, C. Viatte, C. Avis, A. Braverman, R. Castano, A. Chang, L. Chapsky, C. Cheng, B. Connor, L. Dang, G. Doran, B. Fisher, C. Frankenberg, D. Fu, R. Granat, J. Hobbs, R. Lee, L. Mandrake, J. McDuffie, C. Miller, V. Myers, V. Natraj, D. O'Brien, G. Osterman, F. Oyafuso, **V. Payne**, H. Pollock, I. Polonsky, C. Roehl, R. Rosenberg, F. Schwandner, M. Smyth, V. Tang, T. Taylor, C. To, D. Wunch, and J. Yoshimizu, The Orbiting Carbon Observatory-2: First 18 months of Science Data Products, *Atmos. Meas. Tech.*, 10, 549–563, doi:10.5194/amt-2016-247, 2017
- B. J. Drouin, D. C. Benner, L. R. Brown, M. Cich, T. Crawford, V. M. Devi, A. Guillaume, J. T. Hodges, E. J. Mlawer, D. Robichaud, F. Oyafuso, **V. H. Payne**, K. Sung, E. Wishnow and S. Yu, Multispectrum analysis of the oxygen A-band, *J. Quant. Spectrosc. Radiat. Transfer*, doi:10.1016/j.jqsrt.2016.03.037, 2017

2016

- W. Berg, S. Bilanow, R. Chen, S. Datta, D. Draper, H. Ebrahimi, S. Farrar, W. L. Jones, R. Kroodsma, D. McKague, **V. Payne**, J. Wang, T. Wilheit and J. X. Yang, Intercalibration of the GPM microwave Radiometer Constellation, *Journal of Atmospheric and Oceanic Technology*, <http://dx.doi.org/10.1175/JTECH-D-16-0100.1>, published online 13th October 2016
- H. Oetjen, **V. H. Payne**, J. L. Neu, S. S. Kulawik, D. P. Edwards, A. Eldering, H. M. Worden and J. Worden, A joint data record of tropospheric ozone profiles from Aura-TES and MetOp-IASI, *Atmos. Chem. Phys.*, 16, 10229-10239, doi:10.5194/acp-16-10229-2016, August 2016
- W. Dolan, **V. H. Payne**, S. S. Kulawik and K. W. Bowman, Satellite observations of ethylene (C₂H₄) from the Aura Tropospheric Emission Spectrometer: A scoping study, *Atmos. Env.*, 141, 388-393, July 2016

- Z. Jiang, J. R. Worden, **V. H. Payne**, L. Zhu, E. Fischer, T. Walker, and D. B. A. Jones (2016), Ozone export from East Asia: The role of PAN, *J. Geophys. Res. Atmos.*, 121, 6555–6563, doi:10.1002/2016JD024952, June 2016
- D. C. Benner, V. M. Devi, K. Sung, L. R. Brown, C. E. Miller, **V.H. Payne**, B. J. Drouin, S. Yu, T. J. Crawford, A. W. Mantz, M. A. H. Smith and R. R. Gamache, Line parameters including temperature dependences of air- and self-broadened line shapes of $^{12}\text{C}^{16}\text{O}_2$: 2.06 micron region, *J. Mol. Spec.*, 326, 21-47, September 2016
- V. M. Devi, D. C. Benner, K. Sung, L. R. Brown, T. J. Crawford, C. E. Miller, B. J. Drouin, **V. H. Payne**, S. Yu, M. A. H. Smith, A. W. Mantz and R. R. Gamache, Line parameters including temperature dependences of air- and self-broadened line shapes of $^{12}\text{C}^{16}\text{O}_2$: 1.6 micron region, *J. Quant. Spectrosc. Radiat. Transfer*, 177, 117-144, July 2016
- B. Connor, H. Boesch, J. McDuffie, T. Taylor, D. Fu, C. Frankenberg, C. O'Dell, **V. H. Payne**, M. Gunson, R. Pollock, J. Hobbs, F. Oyafuso and Y. Jiang, Quantification of uncertainties in OCO-2 measurements of XCO₂: Simulations and linear error analysis, *Atmos. Meas. Tech. Discuss.*, doi:10.5194/amt-2016-128, 16th June 2016
- H. Brogniez, S. English, J-F. Mahouf, A. Behrendt, W. Berg, S. A. Boukabara, S. A. Buehler, P. Chambon, A. Gambacorta, A. Geer, W. Ingram, E. R. Kursinski, M. Matricardi, T. A. Odintsova, **V. H. Payne**, P. Thorne, M. Yu Tretyakov and J. Wang, A review of sources of systematic errors and uncertainties in observations and simulations at 183 GHz, *Atmos. Meas. Tech.*, 9, 2207-2221, doi:10.5194/amt-0-2207-2016, 18th May 2016

2015

- L. Zhu, E. V. Fischer, **V. H. Payne**, J. R. Worden, Z. Jiang, TES observations of the interannual variability of PAN over Northern Eurasia and the Relationship to Springtime Fires, *Geophys. Res. Lett.*, doi:10.1002/2015GL065328 (15th September 2015)
- J. R. Worden, A. J. Turner, A. A. Bloom, S. S. Kulawik, J. Liu, M. Lee, R. Weidner, K. Bowman, C. Frankenberg, R. Parker, and **V. H. Payne**, Quantifying lower tropospheric methane concentrations using near-IR and thermal IR satellite measurements: comparison to the GEOS-Chem model, *Atmos. Meas. Tech.*, 8, 3851-3882 (25th August 2015)
- A. J. Turner, D. J. Jacob, K. J. Wecht, J. D. Maasakkers, S. C. Biraud, H. Boesch, K. W. Bowman, N. M. Deutscher, M. K. Dubey, D. W. T. Griffith, F. Hase, A. Kuze, J. Notholt, H. Ohyama, R. Parker, **V. H. Payne**, R. Sussmann, V. A. Velazco, T. Warneke, P. O. Wennberg, and D. Wunch, Estimating global and North American methane emissions with high spatial resolution using GOSAT satellite data, *Atmos. Chem. Phys.*, 15, 7049-7069 (30th June 2015)
- M. J. Alvarado, **V. H. Payne**, K. E. Cady-Pereira, J. D. Hegarty, S. S. Kulawik, K. J. Wecht, J. R. Worden, and S. C. Wofsy, Impacts of updated spectroscopy on thermal infrared retrievals of methane evaluated with HIPPO data, *Atmos. Meas. Tech.*, 8, 965-985, (27th February 2015)
- G. Clain, H. Brogniez, **V. H. Payne**, V. O. John and M. Luo, An assessment of SAPHIR calibration using quality tropical soundings, *J. Atmos. Oceanic. Tech.*, doi: <http://dx.doi.org/10.1175/JTECH-D-14-00054.1> (2015)

2014

- V. H. Payne**, M. J. Alvarado, K. E. Cady-Pereira, J. R. Worden, S. S. Kulawik and E. V. Fischer, Satellite observations of peroxyacetyl nitrate from the Tropospheric Emission Spectrometer, *Atmos. Meas. Tech.*, 7, 3737-3749 (2014)
- H. Oetjen, **V. H. Payne**, S. S. Kulawik, A. Eldering, J. Worden, D. P. Edwards, G. L. Francis, H. M. Worden, C. Clerbaux, J. Hadji-Lazaro and D. Hurtmans, Extending the satellite data record of tropospheric ozone profiles from Aura-TES to MetOp-IASI, *Atmos. Meas. Tech.*, 7, 4223-4236, doi:10.5194/amt-7-4223-2014 (2014)
- B. J. Drouin, **V. H. Payne**, F. Oyafuso, K. Sung and E. J. Mlawer, Pressure broadening of oxygen by water, *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 133, January 2014, Pages 190-198,

2013

- J. Worden, Z. Jiang, D. Jones, M. Alvarado, K. Bowman, C. Frankenberg, E. A. Kort, S. S. Kulawik, M. Lee, J. Liu, **V. H. Payne**, K. Wecht and H. Worden, El Nino, the 2006 Indonesian peat fires and the distribution of atmospheric methane, *Geophys. Res. Lett.*, 40 (18), 4938-4943 (2013)
- M. J. Alvarado, **V. H. Payne**, E. J. Mlawer, G. Uymin, M. W. Shephard, K. E. Cady-Pereira, J. S. Delamere and J.-L. Moncet, Performance of the line-by-line radiative transfer model (LBLRTM) for temperature and species retrievals: Recent updates evaluated with IASI case studies, *Atmos. Chem. Phys.*, 13, 6687-1711 (2013)
- J. Worden, K. Wecht, C. Frankenberg, M. Alvarado, K. Bowman, E. Kort, S. Kulawik, M. Lee, **V. H. Payne**, and H. Worden, CH₄ and CO distributions over tropical fires as observed by the Aura TES satellite instrument and modeled by GEOS-Chem, *Atmos. Chem. Phys.*, 13, 3679-3692 (2013)

2012 and earlier

- K. W. Wecht, D. J. Jacob, S. C. Wofsy, E. A. Kort, J. R. Worden, S. S. Kulawik, D. K. Henze, M. Kopacz, and **V. H. Payne**, Validation of TES methane with HIPPO aircraft observations: implications for inverse modeling of methane sources, *Atmos. Chem. Phys.*, 12, 1823–1832 (2012)
- J. Worden, S. Kulawik, C. Frankenberg, **V. H. Payne**, K. Bowman, K. Cady-Pereira, K. Wecht, J.-E. Lee, and D. Noone, Profiles of CH₄, HDO, H₂O, and N₂O with improved lower tropospheric vertical resolution from Aura TES radiances, *Atmos. Meas. Tech.*, 5, 397–411 (2012)
- K. E. Cady-Pereira, M. W. Shephard, D. B. Millet, M. Luo, K. C. Wells, Y. Xiao, **V. H. Payne**, J. Worden, Methanol from TES Global Observations: Retrieval Algorithm and Seasonal and Spatial Variability, *Atmos. Chem. Phys.*, 12, 8189-8203 (2012)
- Y. Xiao, K. E. Cady-Pereira, **V. H. Payne**, D. B. Millet, M. W. Shephard, M. Luo, M. Alvarado, K. C. Wells, E. C. Apel, T. L. Campos, H. B. Singh, and G. W. Sachse, Methanol-CO correlations in Mexico City Pollution outflow from aircraft and satellite during MILAGRO, *Atmos. Chem. Phys. Discuss.*, 12, 5705-5783 (2012)
- E. J. Mlawer, **V. H. Payne**, J.-L. Moncet, J. S. Delamere, M. J. Alvarado and D. C. Tobin, Development and evaluation of the MT_CKD model of continuum absorption, *Phil. Trans. R. Soc. A*, 370, 2520-2556, doi:10.1098/rsta.2011.0295 (2012)
- V. H. Payne**, E. J. Mlawer, K. E. Cady-Pereira and J.-L. Moncet, Water vapor continuum absorption in the microwave, *IEEE Trans. Geosci. Remote Sens.*, vol 49 (6), 2194-2208 (2011)
- M. J. Alvarado, K. E. Cady-Pereira, Y. Xiao, D. B. Millet and **V. H. Payne**, Emission Ratios for Ammonia and Formic Acid and Observations of Peroxy Acetyl Nitrate (PAN) and Ethylene in Biomass Burning Smoke as Seen by the Tropospheric Emission Spectrometer (TES), *Atmosphere*, 2(4), 633-654, doi:10.3390/atmos2040633 (2011)
- T. C. Connor, M. W. Shephard, **V. H. Payne**, K. E. Cady-Pereira, S. S. Kulawik, M. Luo, G. Osterman and M. Lampel, Long term stability of TES satellite radiance measurements, *Atmos. Meas. Tech.*, 4, 1481-1490 (2011)
- M. W. Shephard, K. E. Cady-Pereira, M. Luo, D. K. Henze, R. W. Pinder, J. T. Walker, C. P. Rinsland, J. O. Bask, L. Zhu, **V. H. Payne** and L. Clarisse, TES ammonia retrieval strategy and global observations of the spatial and seasonal variability of ammonia, *Atmos. Chem. Phys.*, 11, 10743-10763 (2011)
- J. S. Delamere, S. A. Clough, **V. H. Payne**, E. J. Mlawer, D. D. Turner and R. R. Gamache, A far-infrared radiative closure study in the Arctic: Application to water vapor, *J. Geophys. Res.*, vol. 115, D17106, doi:10.1029/2009JD012968 (2010)
- V. H. Payne**, M. W. Shephard, S. A. Clough, J. A. Logan and R. Nassar, Information-centered representation of retrievals with limited degrees of freedom for signal: Application to methane from the Tropospheric Emission Spectrometer, *J. Geophys. Res.*, vol 114, D10307, doi:1029/2008JD101055 (2009)

- D. Cimini, F. Nasir, E. R. Westwater, **V. H. Payne**, D. D. Turner, E. J. Mlawer, M. L. Exner and M. P. Cadeddu, Comparison of ground-based millimeter wave observations in the Arctic winter, *IEEE Trans. Geosci. Remote Sens.*, vol. 47, no. 9, 3098 (2009)
- M. W. Shephard, S. A. Clough, **V. H. Payne**, W. L. Smith, S. Kireev and K. E. Cady-Pereira, Performance of the line-by-line radiative transfer model (LBLRTM) for temperature and species retrievals: IASI case studies from JAIVEx, *Atmos. Chem. Phys.*, 9, 7397-7417 (2009)
- S. Payan, C. Camy-Peyret, H. Oelhaf, G. Wetzel, G. Maucher, C. Keim, M. Pirre, N. Huret, A. Engel, M. C. Volk, H. Kuellmann, J. Kuttippurath, U. Cortesi, G. Bianchini, F. Mencaraglia, P. Raspollini, G. Redaelli, C. Vigouroux, M. De Mazière, S. Mikuteit, T. Blumenstock, V. Velazco, J. Notholt, E. Mahieu, P. Duchatelet, D. Smale, S. Wood, N. Jones, C. Piccolo, **V. Payne**, A. Bracher, N. Glatthor, G. Stiller, K. Grunow, P. Jeseck, Y. Te, and A. Butz, Validation of version-4.61 methane and nitrous oxide observed by MIPAS, *Atmos. Chem. Phys.*, 9, 413-442 (2009)
- C. Piccolo, A. DUDHIA and **V. H. Payne**, Heavy ozone enrichments from MIPAS Limb emission spectra, *Atmos. Chem. Phys. Discuss.*, 9, 25127-25128 (2009)
- V. H. Payne**, J. S. Delamere, K. E. Cady-Pereira, R. R. Gamache, J-L. Moncet, E. J. Mlawer and S. A. Clough, "Air-broadened halfwidths of the 22 GHz and 183 GHz water vapor lines", *IEEE Trans. Geosci. Remote Sens.*, vol. 46 (11), 3601-3617 (2008)
- R. Beer, M. W. Shephard, S. S. Kulawik, S. A. Clough, A. Eldering, K. W. Bowman, S. P. Sander, B. M. Fisher, **V. H. Payne**, M. Luo, G. B. Osterman and J. R. Worden, First satellite observations of lower tropospheric ammonia and methanol, *Geophys. Res. Lett.*, 35, L09801, doi:10.1029/2008GL033642 (2008)
- M. W. Shephard, R. L. Herman, B. M. Fisher, K. E. Cady-Pereira, S. A. Clough, **V. H. Payne** et al., Comparison of Tropospheric Emission Spectrometer (TES) Water Vapor Retrievals with *In Situ* Measurements, *J. Geophys. Res.*, 113 (D15), D15S24, doi:10.1029/2007JD008822 (2008)
- V. H. Payne**, D. Noone, A. DUDHIA, C. Piccolo and R. G. Grainger, "Global satellite measurements of HDO and implications for understanding the entry of water vapour into the stratosphere", *QJRMS*, 133, 1459-1471 (2007)
- M. P. Cadeddu, **V. H. Payne**, S. A. Clough, K. E. Cady-Pereira and J. C. Liljegren, Effect of the oxygen line-parameter modeling on temperature and humidity retrievals from ground-based microwave radiometers, *IEEE Trans. Geosci. Remote Sens.*, 45, 2216-2223 (2007).
- P. Raspollini, C. Belotti, A. Burgess, B. Carli, M. Carlotti, S. Ceccherini, B. M. Dinelli, A. DUDHIA, J-M. Flaud, B. Funke, M. Hoepfner, M. Lopez-Puertas, **V. Payne**, C. Piccolo, J. J. Remedios, M. Ridolfi, R. Spang, MIPAS Level 2 operational analysis, *Atmos. Chem. Phys.*, 6, 5605-5630 (2006)
- B. Carli, D. Alpaslan, M. Carlotti, E. Castelli, S. Ceccherini, B. M. Dinelli, A. DUDHIA, J.-M. Flaud, M. Hoepfner, V. Jay, L. Magnani, H. Oelhaf, **V. Payne**, C. Piccolo, M. Prosperi, P. Raspollini, M. Ridolfi, J. Remedios and R. Spang, First results from MIPAS/ENVISAT with operational Level 2 code, *Advances in Space Research*, 33(7), 1012-1019 (2004)
- A. B. Burgess, R. G. Grainger, A. DUDHIA, **V. H. Payne** and V. L. Jay, MIPAS measurement of sulfur hexafluoride, *Geophys. Res. Lett.*, Vol. 31, No. 5, doi:10.1029/2003GL019143 (2004)
- T. von Clarmann, S. Ceccherini, A. Doicu, A. DUDHIA, B. Funke, U. Grabowski, S. Hilgers, V. Jay, A. Linden, M. López-Puertas, F.-J. Martín-Torres, **V. Payne**, J. Reburn, M. Ridolfi, F. Schreier, G. Schwarz, R. Siddans, and T. Steck, A blind test retrieval experiment for infrared limb emission spectrometry, *J. Geophys. Res.*, Vol. 108, No. D23, 4746, doi:10.1029/2003JD003835 (2003)